

Historic, archived document

Do not assume content reflects current scientific knowledge, policies, or practices.



U.S. DEPARTMENT OF AGRICULTURE
NATIONAL AGRICULTURAL LIBRARY
GEO. A. FLOHR
LIBRARY
NOV 11 1971
BETHESDA, MD.



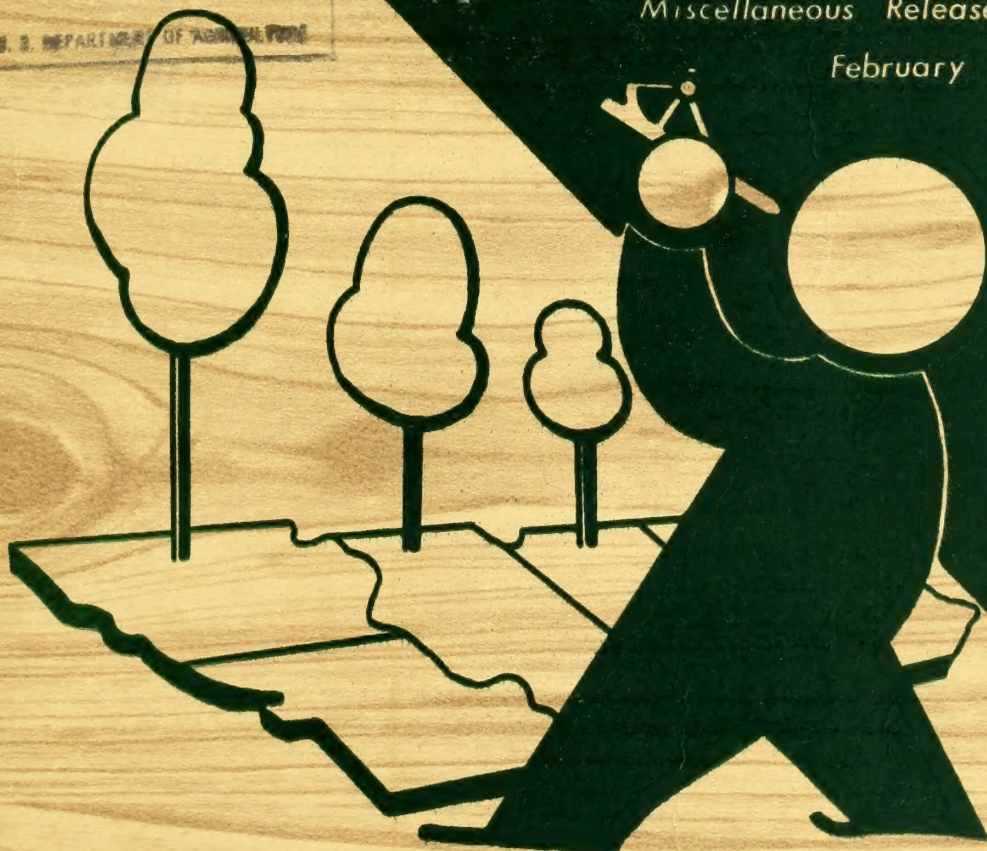
T
I
M
B
E
R

CENTRAL STATES



Miscellaneous Release 13

February 1957



RESOURCES

U. S. DEPARTMENT OF AGRICULTURE

FOREST SERVICE

Central States Forest Experiment Station

This report is from the
Division of Forest Economics
CENTRAL STATES FOREST EXPERIMENT STATION

Russell N. Cunningham, Chief

Compiled by

O. Keith Hutchison and Philip L. Thornton

Central States Forest Experiment Station, U. S. Dept. of Agriculture
Forest Service, 111 Old Federal Building, Columbus 15, Ohio
W. G. McGinnies, Director

CONTENTS

	<u>Page</u>
Forest Area	2
Ownership	3
Forest Types and Species	4
Stand Size	5
Volume	6
Quality	7
Growth and Drain	8
Conclusion	9
Tables	
1. Land area by major class of land	10
2. Commercial forest land area by stand-size class and state	10
3. Commercial forest land area by stand-size class and degree of stocking	11
4. Commercial forest land area by ownership class and state	11
5. Commercial forest land area by ownership class, and stand-size class	12
6. Commercial forest land area in private ownership and number of private owners, by size-class of owner and state	13
7. Commercial forest land area in private ownership and number of private owners by type of ownership and state	14
8. Commercial forest land area in private ownership by size class and type of ownership	15
9. Commercial forest land area by major forest type and state	15
10. Net volume of all timber on commercial forest land by class of material, and by softwoods and hardwoods	16
11. Net volume of growing stock on commercial forest land by class of material and softwoods and hardwoods, and by state	17
12. Net volume of growing stock on commercial forest land by species group and state	18
13. Net volume of growing stock on commercial forest land by ownership class and state	19
14. Net volume of growing stock on commercial forest land by species group and diameter class	19
15. Net volume of live sawtimber in sawtimber stands and other stands on commercial forest land by softwoods and hardwoods, by state	20

16.	Net volume of live sawtimber on commercial forest land by species group and state	21
17.	Net volume of live sawtimber on commercial forest land by ownership class and state	22
18.	Net volume of live sawtimber on commercial forest land by species group and diameter class	23
19.	Sound volume in cull and dead timber and hardwood limbs on commercial forest land	24
20.	Net annual growth of growing stock on commercial forest land by species and state	25
21.	Net annual growth of sawtimber on commercial forest land by species and state	26
22.	Annual mortality of sawtimber and growing stock on commercial forest land by cause and state	27
23.	Timber products output by product and state	28
24.	Timber cut from growing stock on commercial forest land by selected products, by softwood and hardwood, and by state	29
25.	Volume of plant residues from primary manufacturing . .	30

CENTRAL STATES TIMBER RESOURCES

In 1952 the U. S. Forest Service began work on a Timber Resource Review - the latest and most comprehensive appraisal of our Nation's forest situation ever made. Preliminary results were announced in October, 1955 and made available for intensive review by key personnel throughout the fields of forestry and economics. A final revised report is scheduled for publication and release to the public in 1957.

The TRR combines information derived from special field studies with that obtained from assembling and updating the best data already available. Area and volume statistics were adjusted to January 1, 1953; timber cut and utilization figures are for the calendar year 1952. The task was made possible through excellent cooperation between federal and state agencies and private industries.

This report is for managers of forest land, forest industry personnel, and all others interested in the forests of the Central States. The statistics presented here are taken from the TRR data except for those that pertain to Iowa. Iowa figures are based on a more intensive survey completed after data were assembled for the TRR. Regular forest surveys of the other five Central States were completed before national statistics were assembled. In some cases, tables included in this report are presented in more detail than will be possible in the TRR publication.

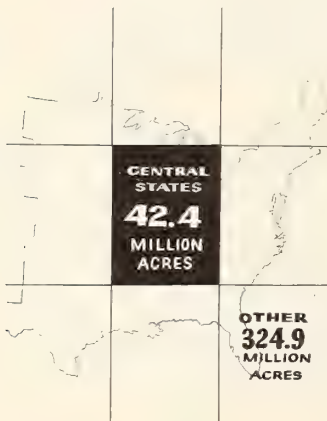
The area and volume figures shown by ownerships may differ slightly from figures published by the agencies concerned. This is because of differences in definitions, specifications, log rules, and cruising standards. Unless indicated otherwise, the board-foot volumes are expressed in net volume log scale - International 1/4-inch rule; cubic foot volumes show net log volume excluding bark; and cord volumes are in net volume including bark in standard cords (128 cubic feet).

FOREST AREA

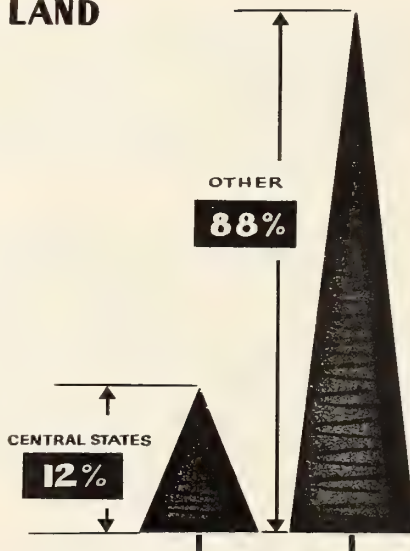
When pioneers first settled in the Central States, forests covered 64 percent of the land area. Generations of farming and land clearing reduced the forest cover to about 22 percent. The forests are now largely concentrated in the mountainous areas of Missouri and Kentucky and the southern portions of Ohio, Indiana, and Illinois. Some counties are still more than 90 percent forested while others have less than 2 percent forest.

Almost every one of the 42.4 million acres of forest land in the Central States is capable of producing sawlog-size timber and virtually the entire area is accessible with modern logging equipment. Less than 1 percent of the forest land is reserved from timber harvesting.

Commercial FOREST LAND



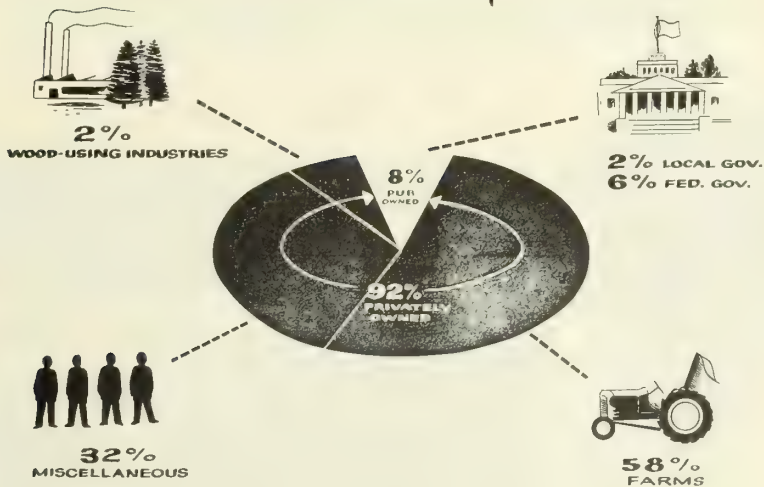
Distribution of commercial forest area in eastern U.S.



OWNERSHIP

Ninety-two percent of the forest land in this region is privately owned. The Federal Government owns a little less than 6 percent and the remainder is owned by state, county, municipal, or other public agencies. The largest national forests in the Central States are located in Missouri and Kentucky. There are about 886,000 private owners of forest land in the Central States. The average ownership is 44 acres and only 8 percent of the owners have more than 100 acres of forest land each. Farmers own about 25 million acres of forest land.

FOREST LAND *Ownership*

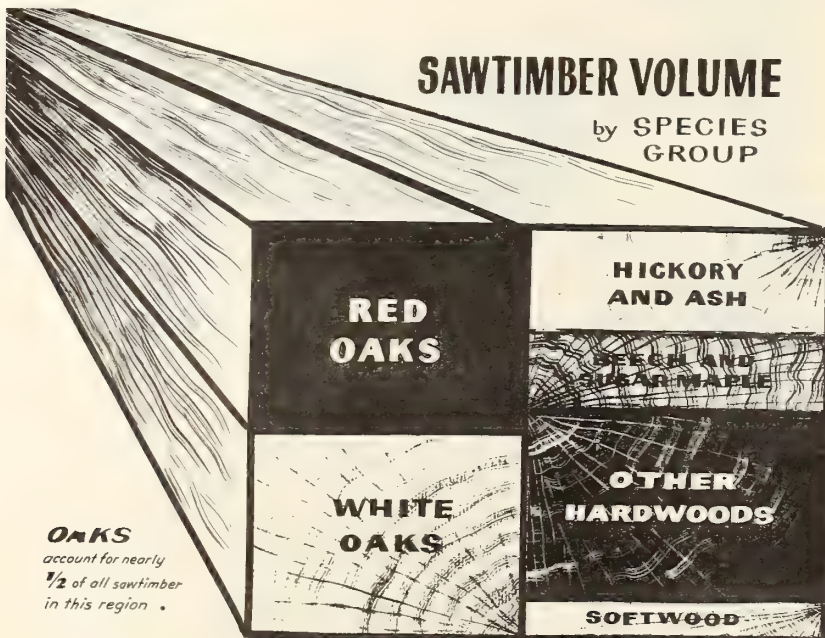


FOREST TYPES AND SPECIES

About two-thirds of the Central States forest area is predominantly oak and hickory. This type is the source of most of the fine white oak, red oak, yellow-poplar, and black walnut timber grown in this region. On the other hand, the type includes some very low-quality stands. Another 18 percent of the forest land is in the elm-ash-cottonwood type. These stands are usually found along streams and poorly drained bottomland. Many fine logs are harvested from this type for use as container veneer. The remaining 14 percent includes the maple-beech-birch type, the pine and oak-pine types, and other minor types.

With 96 percent of the volume in the Central States in hardwood species it is clear that forestry in this region is primarily concerned with growing hardwoods. Pine volume is steadily increasing as plantations develop and natural restocking of pine occurs in some areas but it is doubtful that the Central States will ever become an important softwood producing region.

Fifty percent of the hardwood sawtimber volume is found in oaks. The region is well known for white oak, a species in great demand for barrel staves, veneer, and lumber. Other valuable species, not nearly so abundant however, are yellow-poplar, sugar maple, white ash, cottonwood, and black walnut.

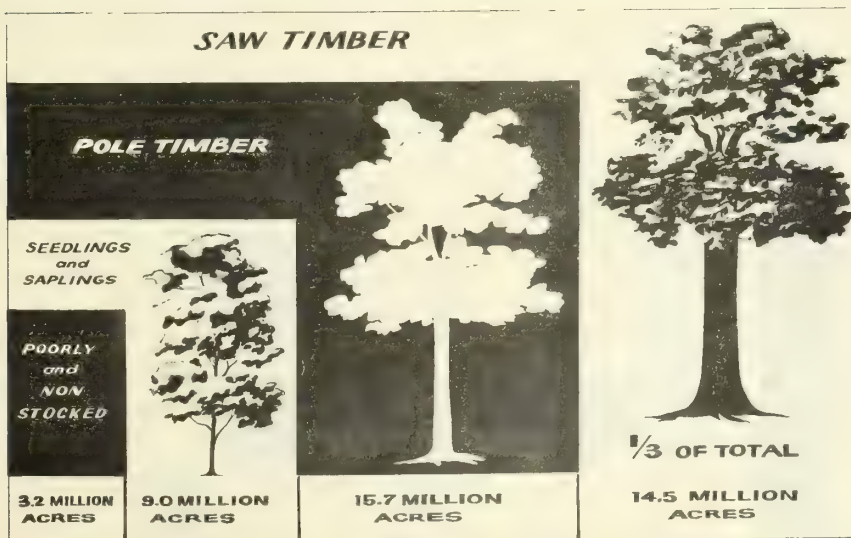


STAND SIZE

Only 34 percent of the forest area is classed as sawtimber - that is, stands that have 1,500 board-feet or more per acre in trees 11 inches or larger in diameter. Thirty-seven percent of the area is in poletimber stands and 21 percent is in seedling and sapling stands. The remaining 8 percent, although classed as forest land, is non-stocked because of heavy cutting, fire, or other causes.

Stand-size distribution varies greatly throughout the Central States. For example, in Missouri only 13 percent of the forest area is classed as sawtimber while in Indiana and Ohio about half the forest is sawtimber. This variation is due primarily to different treatment of the forest in the past - intensity of cutting, protection from fire and grazing, and other factors combine to result in a wide range of forest conditions.

Forest Area BY STAND-SIZE CLASS

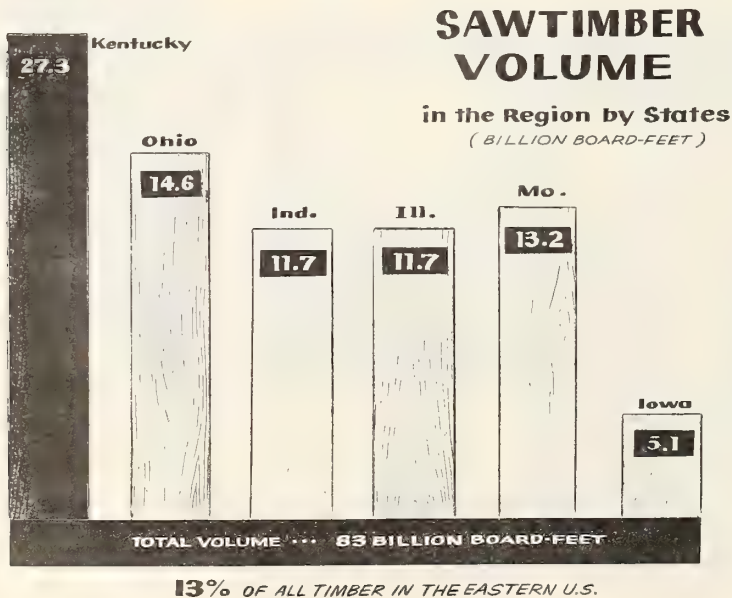


VOLUME

The original forests of the Central States probably averaged about 10,000 board-feet or more per acre. The average volume now is about 2,000 board-feet per acre. This drop in average volume per acre, combined with reduction in forest area by almost two-thirds, means that in the 150 years or so since the Central States were settled, the timber volume has been reduced to about 7 percent of the original.

Eighteen percent of the sawtimber volume in the Central States is in scattered trees in pole and seedling and sapling stands. This figure ranges from 10 percent in Ohio and Indiana to more than 50 percent in Missouri. Stands of sawtimber, regionwide, average about 4,700 board-feet per acre. In general, the most heavily stocked stands are found in the Corn Belt where demand for timber has not been great and cutting is light. Individual stands, usually protected from cutting, with volumes ranging above 25,000 board-feet per acre may still be found in each of the Central States.

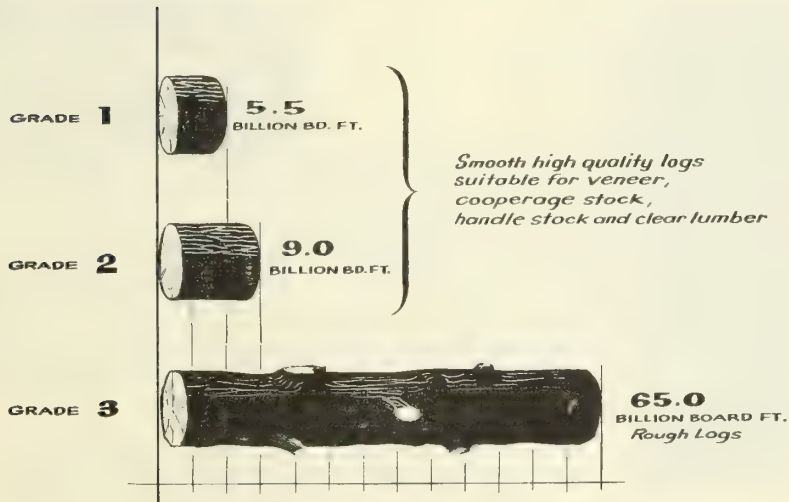
Kentucky, with 33 percent of the total, has more of the sawtimber volume than any other state in the region. Ohio, with 18 percent, has slightly more sawtimber volume than Missouri, despite the fact that Missouri has about three times as much forest area. Illinois and Indiana each have 14 percent of the total; Iowa has only 6 percent.



QUALITY

The quality of hardwood timber is highly variable and therefore volume figures must be broken down by quality classes to be most meaningful. A strong demand exists for veneer logs, stave bolts, and top-quality sawlogs, but low-grade logs are not profitable to harvest under normal market conditions. Only 15 percent of the sawtimber volume in the Central States is in high-quality logs - those that will yield 40 percent or more of their volume in No. 1 common or better lumber. However, studies indicate that about 40 percent of the volume going to sawmills is in high-quality logs and additional high-quality trees are cut for veneer, cooperage, and handle stock. It is not surprising that one out of every five or six sawtimber trees in the forest is a cull and most of the others are low in quality.

HARDWOOD SAWTIMBER VOLUME BY LOG GRADES



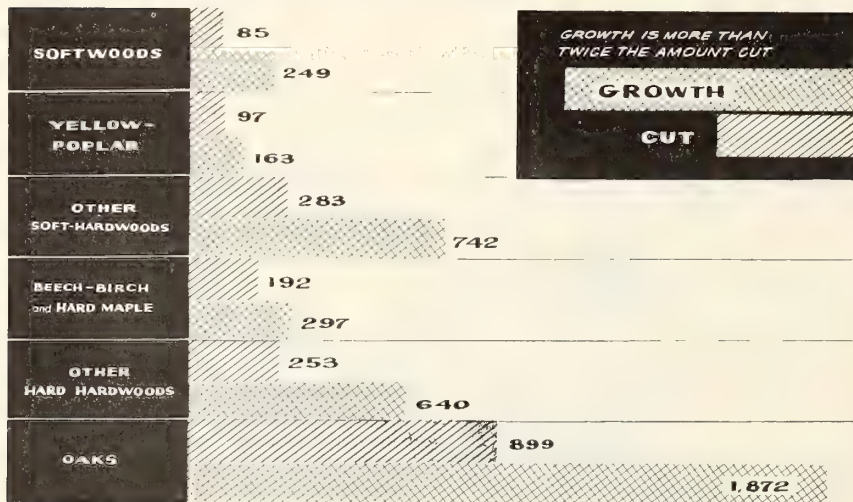
GROWTH AND DRAIN

The Central States forests, in general, have sufficient growing stock to permit rapid stand improvement by applying good forest management practices. The average volume of growing stock is about 580 cubic feet per acre and 40 percent of it is in trees 10 inches in diameter or smaller; an additional 24 percent is in trees in the 12- and 14-inch diameter classes. To obtain maximum growth and quality most of the volume should be in the 16- and 18-inch diameter classes.

Annual growth of sawtimber in the Central States exceeds 4 billion board-feet. This amounts to about 100 board-feet per acre per year - a figure that could be doubled or tripled with reasonable effort. About 80 percent of the forest land is well enough stocked so that volume will increase rapidly if the stands are adequately protected and well managed. A trend in that direction is indicated by the fact that at the present time the forests are growing more than twice as much as is being harvested.

TIMBER *Growth* VERSUS *Cut* BY SPECIES GROUP

in million board-feet



Oaks account for nearly half of both the growth and the cut

CONCLUSION

The downward trend of forest area and volume has apparently been halted in the Central States although quality is still declining. Probably there will be no significant reduction in forest area in future years and there are indications that inventory of timber volume on these areas will show a net increase each year. Although demand for timber products is constantly changing, the Nation's ever-increasing population combined with technological advances making possible greater use of wood can be expected to tax our forest resource severely. To insure adequate timber supplies for future generations it is essential that each forest acre be brought to full production.



The following tables present the timber resource statistics for the Central States in detail.

Table 1.--Land area by major class of land
(In thousand acres)

Land class	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Forest land							
Commercial	42,484	3,938	4,045	2,595	11,446	15,064	5,396
Non-commercial	352 ^{1/}	55	58	25	51	113	50
Total forest land	42,836	3,993	4,103	2,620	11,497	15,177	5,446
Cropland in farms ^{2/}	87,350	21,351	11,777	22,905	6,336	13,651	11,330
Pasture and range ^{3/}	38,717	4,856	3,518	6,765	6,961	11,506	5,111
Other ^{4/}	21,993	5,598	3,773	3,579	719	3,971	4,353
Total land	190,896	35,798	23,171	35,869	25,513	44,305	26,240

^{1/} Includes 85,000 acres of forest land currently unproductive for timber, some of which may be currently used for grazing, watershed management, recreation, or wildlife management.

^{2/} Source: 1950 Census of Agriculture.

^{3/} Exclusive of that in forest land.

^{4/} Farmsteads, roads, powerlines, urban, etc.

Table 2.--Commercial forest land area
by stand-size class and state
(In thousand acres)

Stand-size class	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Sawtimber stands	14,589	1,823	2,084	1,006	4,964	2,033	2,679
Poletimber stands	15,643	981	1,337	830	4,040	6,477	1,978
Seedling and sapling stands	8,903	729	600	287	1,830	4,778	679
Nonstocked and other areas	3,349	405	24	472	612	1,776	60
Total	42,484	3,938	4,045	2,595	11,446	15,064	5,396

Table 3.--Commercial forest land area by
stand-size class and degree of stocking
(In thousand acres)

Stand-size class	Total	Well and medium stocked ^{1/}	Poorly stocked ^{2/}	Nonstocked and other areas ^{3/}
Sawtimber stands	14,589	13,450	1,139	--
Poletimber stands	15,643	14,129	1,514	--
Seedling & sapling stands	8,903	6,906	1,997	--
Other	3,349	--	--	3,349
Total	42,484	34,485	4,650	3,349

^{1/} 40 percent or more stocked.

^{2/} 10 - 39 percent stocked.

^{3/} Less than 10 percent stocked.

Table 4.--Commercial forest land area by
ownership class and state
(In thousand acres)

Ownership class	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Federal ownership or trusteeship:							
National Forest	2,181	184	112	3	455	1,339	88
Indian	1	--	--	1	--	--	--
Bureau of Land Mgt.	1	--	--	--	--	(1/)	--
Other	439	32	60	9	217	121	(1/)
Total federal	2,622	216	172	13	672	1,461	88
State	518	10	109	22	53	156	168
County and municipal	45	(1/)	2	2	(1/)	(1/)	41
Private:							
Farm	24,658	3,050	2,878	2,282	4,903	8,498	3,047
Wood-using industries ^{2/}	817	10	9	--	308	460	30
Other	13,824	652	875	276	5,510	4,489	2,022
Total private	39,299	3,712	3,762	2,558	10,721	13,447	5,099
All ownerships	42,484	3,938	4,045	2,595	11,446	15,064	5,396

^{1/} Less than 0.5 thousand acres.

^{2/} Includes lumber, pulp, and other wood-using industries.

Table 5.--Commercial forest land area by ownership class, and stand-size class
(In thousand acres)

Class of ownership	Total	Sawtimber stands	Poletimber stands	Seedling and sapling stands	Nonstocked and other areas
Federal ownership or trusteeship:					
National forest	2,181	905	539	596	141
Indian	1	(1/)	1	(1/)	(1/)
Bureau of Land Management	1	1	--	--	--
Other	439	158	164	95	22
Total federal	2,622	1,064	704	691	163
State	518	207	210	88	13
County and municipal	45	22	17	6	--
Private	39,299	13,296	14,712	8,118	3,173
All ownerships	42,484	14,589	15,643	8,903	3,349

1/ Less than 0.5 thousand acres.

Table 6.--Commercial forest land area in private ownership and number of private owners, by size-class of owner and state

COMMERCIAL FOREST AREA
(In thousand acres)

Size-class of ownership (acres)	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
3 to 100	23,021	2,684	3,219	2,155	5,249	6,331	3,383
100 to 500	11,393	991	485	403	3,312	4,782	1,420
500 to 5,000	3,481	37	15	--	1,616	1,630	183
5,000 to 50,000	1,404	--	43	--	544 ^{1/}	704 ^{1/}	113
Total	39,299	3,712	3,762	2,558	10,721	13,447	5,099

NUMBER OF OWNERS

3 to 100	814,522	126,397	123,118	33,749	214,687	175,343	141,228
100 to 500	67,233	4,646	3,047	989	25,805	24,596	8,150
500 to 5,000	4,229	58	20	--	2,954	1,054	143
5,000 to 50,000	87	--	5	--	42 ^{1/}	32 ^{1/}	8
Total	886,071	131,101	126,190	34,738	243,488	201,025	149,529

^{1/} Includes a few ownerships larger than 50,000 acres to avoid possible disclosure of individual owners.

Table 7.--Commercial forest land area in private ownership and number
of private owners by type of ownership and state

COMMERCIAL FOREST AREA
(In thousand acres)

Ownership class	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Farm	24,697	3,050	2,878	2,321	4,903	8,498	3,047
Wood-using industries	817	10	9	--	308	460	30
Other private	13,785	652	875	237	5,510	4,489	2,022
Total	39,299	3,712	3,762	2,558	10,721	13,447	5,099

NUMBER OF OWNERS

Farm	766,621	116,467	108,319	31,078	207,916	168,435	134,406
Wood-using industries	3,041	633	184	--	1,329	608	287
Other private	116,409	14,001	17,687	3,660	34,243	31,982	14,836
Total	886,071	131,101	126,190	34,738	243,488	201,025	149,529

Table 8.—Commercial forest land area in private ownership
by size class and type of ownership
(In thousand acres)

Type of ownership	All classes	3 to 100 acres	100 to 500 acres	500 to 5,000 acres	5,000 to 50,000 acres	50,000 acres and larger
Farm	24,697	16,046	7,465	1,150	36	--
Lumber manufacturer	541	55	65	347	74	--
Other wood-using	276	1	1	--	23	251
Other private	13,785	6,919	3,862	1,984	871	149
Total	39,299	23,021	11,393	3,481	1,004	400

Table 9.—Commercial forest land area
by major forest type and state
(In thousand acres)

Forest type	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
White-red-jack pine	31	--	9	--	14	--	8
Loblolly-shortleaf pine	580	--	26	--	220	226	108
Oak-pine	1,722	12	85	--	726	793	106
Oak-hickory	28,974	2,315	2,335	1,278	7,871	12,042	3,133
Oak-gum-cypress	1,280	326	138	--	150	609	57
Elm-ash-cottonwood	7,804	1,267	993	1,219	1,601	1,390	1,334
Maple-beech-birch	2,024	18	418	78	864	4	642
Aspen-birch	69	--	41	20	--	--	8
Total	42,484	3,938	4,045	2,595	11,446	15,064	5,396

Table 10.--Net volume of all timber on commercial forest land
by class of material, and by softwoods and hardwoods
(In million cubic feet)

Class of material	Total	Softwoods	Hardwoods
Growing stock:			
Sawtimber trees:			
Sawlog portion	13,334	590	12,744
Upper stems	2,243	77	2,166
Total sawtimber trees	15,577	667	14,910
Poletimber trees	9,246	378	8,868
Total growing stock	24,823	1,045	23,778
Non-growing stock:			
Sound cull trees	1,723	10	1,713
Rotten cull trees	2,957	8	2,949
Hardwood limbs	7,508	--	7,508
Salvable dead sawtimber trees	81	--	81
Salvable poletimber trees	29	--	29
Total non-growing stock	12,298	18	12,280
Total, all timber	37,121	1,063	36,058

Table 11.--Net volume of growing stock on commercial forest land by class of material and softwoods and hardwoods, and by state
MILLION CUBIC FEET

Growing stock class :	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Sawtimber trees:							
Softwood	667	12	13	1	388	187	66
Hardwood	14,910	2,111	2,071	1,053	4,465	2,623	2,587
Total	15,577	2,123	2,084	1,054	4,853	2,810	2,653
Poletimber trees:							
Softwood	378	2	13	3	183	147	30
Hardwood	8,868	925	944	325	2,798	2,546	1,330
Total	9,246	927	957	328	2,981	2,693	1,360
Total softwood	1,045	14	26	4	571	334	96
Total hardwood	23,778	3,036	3,015	1,378	7,263	5,169	3,917
Total	24,823	3,050	3,041	1,382	7,834	5,503	4,013
MILLION CORDS							
Sawtimber trees:							
Softwood	9.9	0.2	0.2	(1/)	5.7	2.8	1.0
Hardwood	225.8	31.9	31.4	16.0	67.6	39.7	39.2
Total	235.7	32.1	31.6	16.0	73.3	42.5	40.2
Poletimber trees:							
Softwood	6.4	(1/)	0.2	(1/)	3.2	2.5	0.5
Hardwood	143.0	15.0	15.2	5.2	45.1	41.1	21.4
Total	149.4	15.0	15.4	5.2	48.3	43.6	21.9
Total softwood	16.3	0.2	0.4	(1/)	8.9	5.3	1.5
Total hardwood	368.8	46.9	46.6	21.2	112.7	80.8	60.6
Total	385.1	47.1	47.0	21.2	121.6	86.1	62.1

1/ Less than 0.05 million cords.

Table 12.--Net volume of growing stock on commercial forest
land by species group and state

IN MILLION CUBIC FEET

Species	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Softwoods:							
White and red pine	10	--	--	--	10	--	--
Southern yellow pine	748	--	18	--	430	229	71
Hemlock	62	--	--	--	62	--	--
Cypress	64	5	1	--	10	48	--
Other	161	9	7	4	59	57	25
Total softwoods	1,045	14	26	4	571	334	96
Hardwoods:							
Oak	11,626	1,520	1,115	437	3,566	3,575	1,413
Beech, yellow birch and hard maple	1,559	83	379	25	628	46	398
Hickory	2,379	267	285	64	962	424	377
Sweetgum	281	39	55	--	158	18	11
Tupelo and blackgum	275	9	34	--	177	38	17
Yellow-poplar	884	36	141	--	495	4	208
Cottonwood and aspen	413	66	35	135	27	126	24
Other	6,361	1,016	971	717	1,250	938	1,469
Total hardwoods	23,778	3,036	3,015	1,378	7,263	5,169	3,917
Total, all species	24,823	3,050	3,041	1,382	7,834	5,503	4,013

IN MILLION CORDS

Softwoods:							
White and red pine	.2	--	--	--	.2	--	--
Southern yellow pine	11.8	--	.3	--	6.7	3.7	1.1
Hemlock	.9	--	--	--	.9	--	--
Cypress	.9	0.1	(1/)	--	.1	.7	--
Other	2.5	.1	.1	.0	1.0	.9	.4
Total softwoods	16.3	.2	.4	.0	8.9	5.3	1.5
Hardwoods:							
Oak	179.9	23.3	17.1	6.7	55.2	55.9	21.7
Beech, yellow birch and hard maple	24.1	1.3	5.9	.4	9.7	.7	6.1
Hickory	37.3	4.2	4.5	1.0	15.0	6.7	5.9
Sweetgum	4.5	.6	.9	--	2.5	.3	.2
Tupelo and blackgum	4.2	.1	.5	--	2.7	.6	.3
Yellow-poplar	13.7	.6	2.2	--	7.6	.1	3.2
Cottonwood and aspen	6.3	1.0	.5	2.1	.4	1.9	.4
Other	98.8	15.8	15.0	11.0	19.6	14.6	22.8
Total hardwoods	368.8	46.9	46.6	21.2	112.7	80.8	60.6
Total, all species	385.1	47.1	47.0	21.2	121.6	86.1	62.1

1/ Less than 0.05 million cords.

Table 13.--Net volume of growing stock on commercial forest land
by ownership class and state
(In million cubic feet)

Class of ownership	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Federal ownership or trusteeship:							
National Forest	1,114	122	50	1	380	504	57
Other	269	25	46	7	147	44	<u>1/</u>
	1,383	147	96	8	527	548	57
State, county and municipal	331	8	80	12	39	59	133
Private	23,109	2,895	2,865	1,362	7,268	4,896	3,823
Total, all ownerships	24,823	3,050	3,041	1,382	7,834	5,503	4,013

1/ Less than 0.5 million cubic feet.

Table 14.--Net volume of growing stock on commercial forest land
by species group and diameter class
(In million cords)

Species group	D.b.h. Class (inches)				
	Total	5.0-6.9	7.0-8.9	9.0-10.9	11.0 and larger
Softwoods:					
White and red pine	0.2	(<u>1/</u>)	(<u>1/</u>)	--	0.2
Southern yellow pine	11.8	1.8	3.1	2.2	4.7
Hemlock	.9	(<u>1/</u>)	.1	.1	.7
Cypress	.9	(<u>1/</u>)	(<u>1/</u>)	(<u>1/</u>)	.9
Other softwoods	2.5	.8	.6	.4	.7
All softwoods	16.3	2.6	3.8	2.7	7.2
Hardwoods:					
Oak	179.9	14.4	23.4	29.7	112.4
Beech-yellow birch-					
hard maple	24.1	1.6	2.3	2.7	17.5
Hickory	37.3	4.6	7.1	7.2	18.4
Sweetgum	4.5	.3	.7	.8	2.7
Tupelo and blackgum	4.2	.2	.4	.7	2.9
Yellow-poplar	13.7	.7	1.4	1.8	9.8
Cottonwood and aspen	6.3	.2	.2	.6	5.3
Other hardwoods	98.8	10.7	14.9	16.4	56.8
All hardwoods	368.8	32.7	50.4	59.9	225.8
All species	385.1	35.3	54.2	62.6	233.0

1/ Less than 0.05 million cords.

Table 15.--Net volume of live sawtimber in sawtimber stands and other stands on commercial forest land by softwoods and hardwoods, by state
(In million board-feet)

Stand-size class	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Sawtimber stands							
Softwood	2,672	43	44	1	1,791	518	275
Hardwood	65,809	10,268	10,706	4,256	21,839	5,888	12,852
Total	68,481	10,311	10,750	4,257	23,630	6,406	13,127
Other stands ^{1/}							
Softwood	754	1	10	5	376	291	71
Hardwood	14,409	1,382	911	830	3,336	6,498	1,452
Total	15,163	1,383	921	835	3,712	6,789	1,523
All stands							
Softwood	3,426	44	54	6	2,167	809	346
Hardwood	80,218	11,650	11,617	5,086	25,175	12,386	14,304
Total	83,644 ^{2/}	11,694	11,671	5,092	27,342	13,195	14,650

^{1/} Poletimber and seedling and sapling stands and nonstocked and other areas.

^{2/} In addition there are 513 million board-feet of dead chestnut sawtimber, chiefly in Kentucky and Ohio.

Table 16.--Net volume of live sawtimber on commercial forest
land by species group and state
(In million board-feet)

Species	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Softwoods:							
Shortleaf and loblolly pine	1,897	--	42	--	1,085	536	234
Hemlock	432	--	--	--	320	--	112
Cypress	280	21	2	--	42	215	--
Other	817	23	10	6	720	58	--
Total softwoods	3,426	44	54	6	2,167	809	346
Hardwoods:							
White oak ^{1/}	11,418	2,399	1,375	504	2,567	2,811	1,762
Northern red oak ^{2/}	6,045	1,172	1,044	532	1,692	491	1,114
Other oaks	22,167	3,022	2,094	614	8,647	5,057	2,733
Yellow birch and sugar maple	2,822	262	908	98	583	92	879
Soft maple and beech	6,748	782	1,226	462	2,535	229	1,514
Sweetgum	910	135	171	--	512	51	41
Tupelo and blackgum	1,017	36	130	--	648	140	63
Hickory	6,644	789	929	155	2,918	774	1,079
Yellow-poplar	3,649	161	614	--	2,029	8	837
Ash, basswood, and black walnut	5,161	540	925	735	1,323	477	1,161
Cottonwood and aspen	1,843	336	162	616	138	465	126
Other	11,794	2,016	2,039	1,370	1,583	1,791	2,995
Total hardwoods	80,218	11,650	11,617	5,086	25,175	12,386	14,304
Total, all species	83,644	11,694	11,671	5,092	27,342	13,195	14,650

^{1/} Quercus alba and Q. prinus.

^{2/} Quercus borealis, Q. falcata var. pagodaefolia, and Q. schumardii.

Table 17.--Net volume of live sawtimber on commercial forest
land by ownership class and state
(In million board-feet)

Class of ownership	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Federal ownership or trusteeship							
National forest	3,444	468	153	4	1,420	1,212	187
Other	915	96	177	24	511	107	--
Total	4,359	564	330	28	1,931	1,319	187
State, county and municipal	1,037	30	222	43	156	141	445
Private	78,248	11,100	11,119	5,021	25,255	11,735	14,018
All ownerships	83,644	11,694	11,671	5,092	27,342	13,195	14,650

Table 18.--Net volume of live sawtimber on commercial forest land
by species group and diameter class
(In million board-feet)

Species group	D.b.h. Class (inches)				
	Total	9.0-10.9	11.0-14.9	15.0-18.9	19.0 and larger
Softwoods:					
Southern yellow pine	2,477	693	1,271	372	141
White and red pine	68	--	2	19	47
Other softwoods	881	116	242	219	304
All softwoods	3,426	809	1,515	610	492
Hardwoods:					
White oaks	19,004	--	7,895	5,325	5,784
Red oaks	20,626	--	7,293	6,344	6,989
Sweetgum, tupelo and blackgum	1,927	--	756	614	557
Yellow-poplar	3,649	--	1,277	1,260	1,112
Yellow birch	--	--	--	--	--
Sugar maple	2,822	--	949	798	1,075
Beech	3,849	--	737	1,116	1,996
Other hardwoods	28,341	--	10,901	8,008	9,432
All hardwoods	80,218	--	29,808	23,465	26,945
All species	83,644	809	31,323	24,075	27,437

Table 19.--Sound volume in cull and dead timber and hardwood limbs on commercial forest land
(In million cubic feet)

Class of material	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Cull trees:							
Sound	1,723	132	63	189	195	999	145
Rotten	2,956	258	312	95	993	992	306
Total cull trees	4,679	390	375	284	1,188	1,991	451
Hardwood limbs	7,508	1,076	950	320	2,339	1,890	933
Salvable dead trees	110	--	--	--	99	--	11
Total	12,297	1,466	1,325	604	3,626	3,881	1,395

Table 20.--Net annual growth of growing stock on commercial forest land by species and state

MILLION CUBIC FEET

Species group	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Softwoods:							
White, red, and jack pine							
Southern yellow pine	33	--	1	--	21	8	3
Spruce and fir	--	--	--	--	--	--	--
Other softwoods	13	1	--	<u>1/</u>	7	4	1
Total	46	1	1	<u>1/</u>	28	12	4
Soft hardwoods:							
Yellow-poplar	40	2	6	--	23	--	9
Other soft hardwoods	218	32	30	39	43	38	36
Total	258	34	36	39	66	38	45
Hard hardwoods:							
Oaks	538	67	51	16	165	179	60
Beech, yellow-birch and hard maple	71	4	17	2	29	2	17
Other hardwoods	234	29	34	11	77	39	44
Total	843	100	102	29	271	220	121
Total, all species	1,147	135	139	68	365	270	170

MILLION CORDS

Softwoods:							
White, red, and jack pine	--	--	--	--	<u>2/</u>	--	--
Southern yellow pine	0.5	--	<u>2/</u>	--	0.3	0.1	0.1
Spruce and fir	--	--	--	--	--	--	--
Other softwoods	.2	<u>2/</u>	--	<u>2/</u>	.1	.1	<u>2/</u>
Total	0.7	<u>2/</u>	<u>2/</u>	<u>2/</u>	0.4	0.2	0.1 "
Soft hardwoods:							
Yellow-poplar	0.6	<u>2/</u>	0.1	--	0.4	--	0.1
Other soft hardwoods	3.4	.5	.5	0.6	.6	0.6	.6
Total	4.0	0.5	0.6	0.6	1.0	0.6	0.7
Hard hardwoods:							
Oaks	8.3	1.0	0.8	0.3	2.5	2.8	0.9
Beech, yellow-birch and hard maple	1.2	.1	.3	<u>2/</u>	.5		.3
Other hardwoods	3.7	.5	.5	.2	1.2	.6	.7
Total	13.2	1.6	1.6	0.5	4.2	3.4	1.9
Total, all species	17.9	2.1	2.2	1.1	5.6	4.2	2.7

1/ Less than 500 thousand cubic feet.2/ Less than 50 thousand cords.

Table 21.--Net annual growth of sawtimber on commercial forest land by species and state
(In million board-feet)

Species group	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Softwoods:							
White, red, and jack pine	6	--	--	--	6	--	--
Southern yellow pine	184	--	2	--	144	29	9
Spruce and fir	--	--	--	--	--	--	--
Other softwoods	59	2	--	--	38	15	4
Total	249	2	2	--	188	44	13
Soft hardwoods							
Yellow-poplar	163	7	26	--	98	<u>1/</u>	32
Other soft hardwoods	758	116	114	135	146	135	112
Total	921	123	140	135	244	135	144
Hard hardwoods:							
Oaks	1,867	279	192	56	627	500	213
Beech, yellow-birch and hard maple	299	14	71	8	134	6	66
Other hardwoods	632	78	92	25	217	100	120
Total	2,798	371	355	89	978	606	399
Total, all species	3,968	496	497	224	1,410	785	556

1/ Less than 0.5 million board-feet.

Table 22.--Annual mortality of sawtimber and growing stock
on commercial forest land by cause and state

SAWTIMBER
(In million board-feet)

Cause	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Fire	42	2	2	0	13	23	2
Disease	105	19	8	12	27	28	11
Other ^{1/}	152	38	9	15	50	28	12
Total, all causes	299	59	19	27	90	79	25

GROWING STOCK
(In million cubic feet)

Fire	21	1	1	1	6	11	1
Disease	27	5	2	2	9	6	3
Other ^{1/}	50	9	4	5	15	13	4
Total, all causes	98	15	7	8	30	30	8

^{1/} Weather, animals, suppression, etc.

Table 23.--Timber products output^{1/} by product and state

Product	Unit of Measure	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Sawlogs for lbr.	Lbr. tally (MBF)	1,360,167	110,000	190,300	87,992	522,500	200,300	249,075
Veneer logs	Thousand BF ^{2/}	62,681	11,000	12,000	4,681	13,000	10,000	12,000
Cooperage bolts	Thousand BF ^{2/}	117,088	11,200	3,000	3,488	37,500	52,500	9,400
Pulpwood	Cords	137,237	45,000	12,000	3,237	30,000	12,000	35,000
Fuelwood	Cords	4,120,233	353,300	410,400	383,433	1,511,900	1,074,100	387,100
Piling	Thousand linear feet	258	172	--	--	--	50	36
Posts	Thousand pieces	44,194	5,000	4,400	2,424	13,800	14,000	4,570
Mine timbers	Thousand Cu. ft.	18,105	2,780	825	--	10,000	3,100	1,400
Other	Thousand Cu. ft.	16,293	776	1,810	378	7,048	4,360	1,921

^{1/} Estimates of timber products output include both roundwood and plant residues.
^{2/} International 1/4-inch log rule.

Table 24 --Timber cut from growing stock on commercial forest land
by selected products, by softwood and hardwood, and by state
(In thousand cubic-feet)

Product	Total	Illinois	Indiana	Iowa	Kentucky	Missouri	Ohio
Sawlogs							
Softwood	12,195	92	53	276	7,320	4,050	404
Hardwood	207,926	19,717	33,232	14,830	75,681	27,866	36,600
Veneer logs							
Softwood	57	--	--	--	57	--	--
Hardwood	11,222	2,173	2,313	826	2,132	1,806	1,972
Cooperage bolts							
Softwood	--	--	--	--	--	--	--
Hardwood	20,716	2,212	577	615	6,282	9,486	1,544
Pulpwood							
Softwood	322	--	--	--	119	202	1
Hardwood	7,622	2,567	744	202	1,558	382	2,169
Fuelwood							
Softwood	55	--	--	--	--	55	--
Hardwood	104,510	6,836	10,818	7,418	46,562	27,341	5,535
Piling							
Softwood	--	--	--	--	--	--	--
Hardwood	169	114	--	--	--	30	25
Posts							
Softwood	4,188	--	92	--	2,494	1,602	--
Hardwood	16,734	1,200	2,197	609	5,795	4,121	2,812
Other products							
Softwood	205	--	--	--	144	60	1
Hardwood	27,405	3,044	2,050	378	13,422	6,503	2,008
All products							
Softwood	17,022	92	145	276	10,134	5,969	406
Hardwood	396,304	37,863	51,931	24,878	151,432	77,535	52,665
Total	413,326	37,955	52,076	25,154	161,566	83,504	53,071

Table 25.--Volume of plant residues from primary manufacturing
(In thousand cubic-feet)

Industry and type of residue	Produced	Used for			Total utilized	Unused
		Fuel	Fibre	Other		
Lumber:						
Coarse ^{1/}	40,739	26,138	--	4,631	30,769	9,970
Fine ^{2/}	25,610	10,015	--	6,590	16,605	9,005
Veneer:						
Coarse	2,023	1,145	465	359	1,969	54
Fine	2,004	1,776	--	19	1,795	209
Cooperage:						
Coarse	9,168	6,087	--	19	6,106	3,062
Fine	3,300	154	--	1,505	1,659	1,641
Other:						
Coarse	1,991	1,895	--	--	1,895	96
Fine	3,441	2,580	--	359	2,939	502
All industries:						
Total coarse	53,921	35,265	465	5,009	40,739	13,182
Total fine	34,355	14,525	--	8,473	22,998	11,357
Total	88,276	49,790	465	13,482	63,737	24,539

^{1/} Coarse residues include slabs, edgings, trimmings, miscuts, veneer cores, cull pieces, and other material generally suitable for chipping.

^{2/} Fine residues include sawdust, shavings, veneer clippings, wood removed in barking, screenings, and other material generally too small for chipping.

TERRITORY SERVED BY THE
CENTRAL STATES FOREST EXPERIMENT STATION
FOREST SERVICE

U. S. DEPARTMENT OF AGRICULTURE

